

## Amendments to the Claims

### Listing of Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A secondary electron detector, especially in a scanning electron microscope, ~~characterized in that~~ it is comprised of comprising:
  - a detector chamber adapted to be coupled with a vacuum pump to produce a vacuum inside the detector chamber, the detector chamber comprising an interior and a plurality of walls separating the interior from a surrounding environment;
  - at least one source of bias voltage; and
  - a sensor [(2)] located in [[a]] said detector chamber [(3)] and having an active surface,  
~~to which a vacuum pump (10) is coupled to produce a vacuum inside the detector chamber (3),~~  
~~the detector chamber (3) being closed in the wall~~
  - wherein one of said walls of said detector chamber is near to the active surface of the sensor (2) by a diaphragm featuring and is closed by an electrically conductive grid, (11; 12) said electrically conductive grid including a plurality of orifices having a high resistance to a transmission of gas and a low resistance to a transmission of electrons, while all its remaining walls vacuum tightly separate the interior of the detector chamber (3) from the surrounding environment, said diaphragm (11; 12) featuring the high resistance to the transmission of gas and the low resistance to the transmission of electrons being constituted by an electrically conductive grid (11) to which said electrically conductive grid connected with the at least one source (16, 17) of bias voltage is connected, said orifices the low resistance to a transmission of electrons being achieved by defining electron microlenses inside and in front of each orifice (13) in said diaphragm (11; 12) said orifices, said electron microlenses being created by an electrical field protruding through said orifices [(13)], said electrical field originating from a conductive coating (15 and/or 8) inside of the detector chamber [(3)], [[where]] and the conductive coating (15 and/or 8) is adapted to be connected to a voltage source (17 and/or 9).

2. (Currently Amended) The secondary electron detector of claim 1, **characterized in that** wherein the electrically conductive grid ~~[(11)]~~ is made of copper.
3. (Currently Amended) The secondary electron detector of claim 1, **characterized in that** wherein the electrically conductive grid ~~[(11)]~~ is constituted by a diaphragm ~~[(12)]~~ made of electrically insulating material and provided with said orifices ~~[(13)]~~, the diaphragm ~~[(12)]~~ being fitted with the including a first side near to the sensor, a first conductive coating [(14)] on the first side, near to the sensor (2) and with the a second side opposite to the first side, and a second conductive coating [(15)] applied to its reverse the second side, ~~[[where]] the first conductive coating [(14) is]]~~ being electrically insulated from the second conductive coating ~~[(15)]~~.
4. (Currently Amended) The secondary electron detector of claim 3, **characterized in that** wherein the diaphragm ~~[(12)]~~ is a ~~kapton~~ polyimide diaphragm.
5. (Currently Amended) The secondary electron detector of claim 1, **characterized in that** wherein the source ~~(16, 17)~~ of bias voltage is a source of bias of 50 V to 2000 V.
6. (Currently Amended) The secondary electron detector of claim 5, **characterized in that** wherein the source ~~(16, 17)~~ of bias voltage is a source of bias voltage of 250 V to 700 V.
7. (Currently Amended) The secondary electron detector of claim 1, **characterized in that** wherein the sensor ~~(2) consists of~~ comprises a light-guide having an input and an output [(4)], between whose input (6) and the electrically conductive grid (11) and further comprising an ionization grid [(25) is]] arranged that is between the input of the light-guide and the electrically conductive grid, the ionization grid adapted to be connected to [[the]] a source [(26)] of ionization voltage, [[while]] and the output of the light-guide output [(4)] adapted to [[leads]] lead to a [[the]] photo-multiplier input.

8. (Currently Amended) The secondary electron detector of claim 7, **characterized in that** wherein the input of the light-guide [(4)] is at its input equipped coupled with a scintillator [(7)], [[whose]] the scintillator including a surface that is near to the electrically conductive grid, (11) is fitted with and the surface of the scintillator having a conductive coating [(8)], to which adapted to be connected with a high voltage source [(9)] is connected.
9. (Currently Amended) The secondary electron detector of claim 1, **characterized in that** wherein the sensor (2) is constituted by comprises a PIN diode.
10. (Cancelled)
11. (Currently Amended) The secondary electron detector of claim 1, **characterized in that** wherein the electrically conductive grid [(11)] is covered outside the detector chamber [(3)] with an input screen [(18)], which is the input screen adapted to be connected to a low voltage source [(19)] of 50 V to 500 V.
12. (Currently Amended) The secondary electron detector of claim [(11)] 1, **characterized in that** that wherein the electrically conductive grid [(11)] is covered outside of the detector chamber (3) covered with an input screen [(18)], which is the input screen adapted to be connected to [[the]] a low voltage source [(19)] of 80 V to 150 V.
13. (Currently Amended) The secondary electron detector of claim 11, **characterized in that** wherein the input screen [(18)] is of hemispherical shape.
14. (Currently Amended) The secondary electron detector of claim 12, **characterized in that** wherein the input screen [(18)] is of hemispherical shape.